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EXAMINER	
QUASH, ANTHONY G	

ART UNIT	PAPER NUMBER
2881	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/665,285	OGASAWARA, MUNEHIRO	
	Examiner	Art Unit	
	Anthony Quash	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspond nc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-9 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-9 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 22 September 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 9/22/03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Objections

1. Claim 6 is objected to because of the following informalities: The claim states in lines 20-21, "... specimen according to the degree of multiple of the multiple scanning." It is unclear to the examiner exactly what the applicant is trying convey here. Appropriate correction is required.

2. Claims 1,5,8 are objected to for use of the word "type". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2,4,9 are rejected under 35 U.S.C. 102(e) as being anticipated by Higashikawa [6,333,138]. As per claim 1,9, Higashikawa [6,333,138] discloses a charged-particle beam writer which draws a pattern on a specimen with a charged-particle beam generated from a single particle generator by both a VSB (variable-shaped beam) strategy and a scan-projection strategy, the charged-particle beam writer comprising a data creating unit configured to create pattern data representing a state where a first-type figure drawn by the VSB strategy and a second-type figure drawn by the scan-projection strategy are arranged on the specimen, a computing unit configured

to calculate, on the basis of the pattern data, the amount of correction for correcting the drawing dimensions of the first-type figure on the specimen and the drawing dimensions of the second-type figure on the specimen, and a control unit configured to control the dose of beam at each position on the specimen on the basis of the calculated amount of correction. See Higashikawa [6,333,138] abstract, figs. 1, 9A-9B, 12, col. 2 lines 45-55, col. 3 lines 5-25,45-55, col. 4 lines 35-68, col. 5 lines 5-15,38-47, col. 6 lines 10-18,40-42, col. 7 lines 55-67, col. 8 lines 9-15, 33-45, col. 9 lines 50-61, col. 10 lines 10-45, col. 12 lines 25-45, col. 15 lines 30-50, and col. 17 lines 50-60.

As per claim 2, Higashikawa [6,333,138] discloses the control unit controls the irradiation time of the charged-particle beam for each position on the specimen. See Higashikawa [6,333,138] col. 2 lines 45-55, col. 3 lines 5-25,45-55, col. 4 lines 35-68, and col. 7 lines 55- col. 8 line 20.

As per claim 4, Higashikawa [6,333,138] discloses the computing unit calculates the amount of correction on the basis of a pattern density distribution on the specimen. See Higashikawa [6,333,138] abstract, col. 2 lines 45-55, col. 3 liens 5-25,45-55, col. 4 lines 35-68, col. 5 lines 5-15, 38-46, col. 6 lines 40-45 and col. 8 lines 10-20, 35-45.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3,5,6,8, are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashikawa [6,333,138]. As per claim 3, Higashikawa [6,333,138] teaches all aspects of the claim except for explicitly stating that the particle generator generates as much of a charged-particle beam as corresponds to the current supplied to the particle generator. However, Higashikawa [6,333,138] does teach the control unit controlling the dosage supplied to the specimen by controlling the blanking of the electron beam for each spot/area irradiated. See Higashikawa [6,333,138] abstract, col. 2 lines 45-55, col. 3 lines 5-25, 45-55, and col. 4 lines 35-68. Since the control unit controls the dosage of the beam to the specimen for each spot/area irradiated, it is the examiner's view that apparatus in Higashikawa [6,333,138] performs the equivalent function. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the particle generator generates as much of a charged-particle beam as corresponds to the current supplied to the particle generator in order to ensure that specific areas on the substrate received the correct dosage.

As per claim 5, Higashikawa [6,333,138] teaches all aspects of the claim except explicitly stating that a part of the specimen on which the first-type figure and the second-type figure overlap with each other, controls the dose of beam by the VSB strategy and the dose of beam by the scan-projection strategy separately at the overlapping part. Higashikawa [6,333,138] does however, teach subtracting a dose amount from the overlapping area after a first shot, before applying a second shot to the overlapping area. See Higashikawa [6,333,138] col. 10 lines 10-45. Therefore it is the examiner's view that the function of subtracting one shot dose from the total amount of

exposure an overlapping area is to receive, before applying a second shot dose to the same overlapping area performs the equivalent function as represent by applicant's claim.

As per claim 6, Higashikawa [6,333,138] teaches wherein the control unit, when multiple scanning is done by the scan-projection strategy, controls the dose of the beam at each position on the specimen according to the degree of multiple of the multiple scanning. See Higashikawa [6,333,138] abstract, figs. 1, 9A-9B, 12, col. 2 lines 45-55, col. 3 lines 5-25,45-55, col. 4 lines 35-68, col. 5 lines 5-15,38-47, col. 6 lines 10-18,40-42, col. 7 lines 55-67, col. 8 lines 9-15, 33-45, col. 9 lines 50-61, col. 10 lines 10-45, col. 12 lines 25-45, col. 15 lines 30-50, and col. 17 lines 50-60.

As per claim 8, Higashikawa [6,333,138] teaches the second-type figure is scanned by the scan-projection strategy. See Higashikawa [6,333,138] abstract, figs. 1, 9A-9B, 12, col. 2 lines 45-55, col. 3 lines 5-25,45-55, col. 4 lines 35-68, col. 5 lines 5-15,38-47, col. 6 lines 10-18,40-42, col. 7 lines 55-67, col. 8 lines 9-15, 33-45, col. 9 lines 50-61, col. 10 lines 10-45, col. 12 lines 25-45, col. 15 lines 30-50, and col. 17 lines 50-60.

Claims 1-2,4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimomura [JP 2001-217173]. As per claims 1,9, Shimomura [JP 2001-217173] a charged-particle beam writer which draws a pattern on a specimen with a charged-particle beam generated from a single particle generator by both of a VSB (variable-shaped beam) strategy and a scan-projection strategy. See Shimomura [JP 2001-217173] abstract, figs. 1-2, paragraphs [0002-0007,0012-0029,0033,0039,0041,0047-

0051,0059-0069]. However, Shimomura [JP 2001-217173] does not explicitly state a data creating unit. Shimomura [JP 2001-217173] does however, teach creating data configured to create pattern data representing a state where a first-type figure drawn by the VSB strategy and a second-type figure drawn by the scan-projection strategy are arranged on the specimen, and a computing unit (Shimomura [JP 2001-217173] paragraphs [0047-0049]) configured to calculate, on the basis of the pattern data, the amount of correction for correcting the drawing dimensions of the first-type figure on the specimen and the drawing dimensions of the second-type figure on the specimen, and a control unit configured to control the dose of beam at each position on the specimen on the basis of the calculated amount of correction. See Shimomura [JP 2001-217173] abstract, figs. 1-2, paragraphs [0002-0007,0012-0029,0033,0039,0041,0047-0051,0059-0069]. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have data creating unit in order to irradiate the substrate and insure that the substrate received the proper dosage.

As per claim 2, Shimomura [JP 2001-217173] teaches the control unit (control calculator memory, paragraph [0047-0049]) controls the irradiation time of the charged-particle beam for each position on the specimen. See Shimomura [JP 2001-217173] paragraphs [0016-0017,0065-0068].

As per claim 4, Shimomura [JP 2001-217173] teaches the computing unit calculates the amount of correction on the basis of a pattern density distribution on the specimen. See Shimomura [JP 2001-217173] paragraphs [0016-0017, 0047-0049,0062-0069].

As per claim 5, Shimomura [JP 2001-217173] teaches the control unit controlling the dose of the beam by the VSB strategy and the dose of beam by the scan-projection strategy separately at the overlapping part, when there is a part of the specimen on which the first-type figure and the second-type figure overlap with each other. Shimomura [JP 2001-217173] paragraphes [0012, 0015, 0037-0038,0062-0069.

As per claim 6, Shimomura [JP 2001-217173] teaches that when multiple scanning is done by the scan-projection strategy, the control unit controls the dose of the beam at each position on the specimen according to the degree of multiple of the multiple scanning. See Shimomura [JP 2001-217173] paragraphs [0014, 0039, 0059-0062,0069].

As per claim 7, Shimomura [JP 2001-217173] teaches a first shaping aperture with a rectangular aperture, a second shaping aperture with a polygonal aperture and a plurality of character apertures, wherein a variable-shaped beam is formed by an optical overlap between the rectangular aperture and the polygonal aperture and a character beam is formed by selecting one of the character apertures. See Shimomura [JP 2001-217173] figs. 1-5 and paragraphs [0021-0026,0036].

As per claim 8, Shimomura [JP 2001-217173] teaches a part of the second-type being scanned by the scan-projection strategy. See Shimomura [JP 2001-217173] abstract, figs. 1-2, paragraphs [0002-0007,0012-0029,0033,0039,0041,0047-0051,0059-0069].

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Nos. 6,274,290 to Veneklasen et al, 6,429,440 to Bleeker, 4,469,950 to Taylor et al, 6,597,001 to Yamashita et al, 5,283,440 to Sohda et al, and 6,603,120 to Yamashita are considered pertinent to the applicant's discussion. Veneklasen [6,274,290] is considered pertinent due to its discussion on writing beam strategy and method for pattern generation. Bleeker [6,429,440] is considered pertinent due to its discussion on a lithography apparatus having a dynamically variable illumination beam. Taylor [4,469,950] is considered pertinent due to its discussion on a charged particle beam exposure system utilizing variable line scan. Yamashita [6,597,001] is considered pertinent due to its discussion method of electron-beam exposure and mask and electron-beam exposure system used therein. Sohda [5,283,440] is considered pertinent due to its discussion on an electron beam writing system used in a cell projection method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Quash whose telephone number is (571)-272-2480. The examiner can normally be reached on Monday thru Friday 9 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571)-272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A. Quash

A.Q.

6/13/04

NIKITA WELLS
PRIMARY EXAMINER

06/14/04